Aerospace Education Member News

Helping America's Teachers Teach America's Future
Focusing on Science, Math, and Technology Education

LEARNING FOR THE NEW MILLENNIUM
CELEBRATING 100 YEARS OF FLIGHT PART IV
IN THIS ISSUE

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FROM THE EDITOR

Part IV of our collaborative effort will move us into WWII curriculum and multiculturalism. In this issue you will find new resources, more lesson plans and information concerning the role of the Tuskegee Airmen in aviation history. The information package will help teachers prepare for Black History month.

As you prepare for your professional development in satisfying individual continuing education state mandates, don't forget to include The National Congress on Aviation and Space Education to be held in Minneapolis, Minnesota at the Hyatt Regency Hotel from 14-17 March, 2001. See the "Conference" tab and the Aerospace Education link at www.capnhq.gov for more details and review The Professional Development section in this newsletter. We are looking forward to the pleasure of your company at this outstanding CAP offering.

As always, we welcome your ideas and suggestions. Please send material to Dr. M. Ann Walko, RDAE/NER at 2610 East 2nd Street, McGuire Air Force Base, New Jersey 08641-5018 or fax material to 609-754-5675 or email at edudoc98@aol.com.

MILLENNIUM MOMENT

THE IMPORTANT THING IS NOT TO STOP QUESTIONING.
Albert Einstein

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AEM NOTES

As educators, we know that unless basic daily needs are met, learning will be hampered. More schools than ever before are participating in federally-funded school breakfast programs, however, more than 2 million children at risk for hunger are not being reached. **The School Breakfast Scorecard: 2000,** an annual report, highlights the fact that the average number of poor children served rose to 6.3 million – double the 3.4 million served in 1990. Copies of the school breakfast report are available online at ***www.frac.org***.

A new report called **More Than Grades: How Choice Boosts Parental Involvement and Benefits Children** indicates that parents who choose where to send their children to school become more involved in their children's education. The study also shows that parents utilizing choice programs are more satisfied with the schools their children attend. An analysis of the report is available online at ***www.cato.org***.

Learning to Lead, Learning to Learn: Improving School Quality Through Principal Professional Development is a new report that advocates the need for principals to get training in instructional strategies rather than management if they are to lead successful schools. The report stresses the need for continual, hands-on training in the classroom for administrative leaders. The report is available for $10 from the National Staff Development Council, PO Box 240, Oxford, Ohio, 45056; (800) 727-7288; or online at ***www.nsdc.org***.

Complementing this report is the granting of $5.1 million dollars from the Bill and Melinda Gates Foundation to the New Jersey Principals and Supervisors Association to hone its administrator's skills at integrating technology into classrooms. This grant is aimed at strengthening school and district leader's understanding of how they can use technology to improve instruction and administration.

In addition to the information cited, The National Association of Secondary Principals is also working to redefine the role of the principal to meet the needs of a changing educational climate. The national association has fine-tuned two programs that have been in existence since the 1970's. The first is **Selecting and Developing the 21st Century Principal** which examines the strengths and weaknesses of not only practicing school leaders, but also those interested in becoming principals. The second effort is called **The Developmental Assessment Center** designed to help teachers or graduate students considering leadership roles in order to assess personal skills and abilities. For more information call (703) 860-0200 or go online at ***www.nassp.org***.

DOING WHAT WORKS is a new report from the American Federation of Teachers (AFT) which praises large school systems for raising test scores and making strides toward improving student performance. Eleven cities are highlighted where students have made academic progress sustained over a three-year period. Call (202) 393-6346 for a copy of the report or go online at ***www.aft.org***.

Another report cites the need for training general education teachers to work with students with disabilities through policies promoting inclusive classrooms, as well as upgrading facilities and classroom resources and instructional materials. The report highlights the severe problems in educating students with disabilities. Copies of the report, **Bright Futures for Exceptional Learners: An Action Agenda to Achieve Quality Conditions for Teaching and Learning** is available online at ***www.cec.sped.org*** or by calling (888) 232-7733.

An on-going theme is that reduced class size can lead to improved learning. You can download the report called **The Class Size Policy Debate** by going to: ***www.epinet.org***. You can also call (800) EPI-4844 to order this for $5.00 (plus shipping).

The lack of educational attainment by Hispanics in the San Francisco Bay area is the focus of a new report entitled **The State of Latino Education in the San Francisco Bay Area: A Crisis in Student Performance** available online at ***www.hispanicfoundation.org***. This information has merit for all educators across the United States due to an increase in the Latino student population in schools. This group will have an impact in terms of change in the Nation's schools in the next 25 years!

The U.S. Department of Education has helped to create a National Teacher Recruitment Clearinghouse to help reduce the teacher shortages across the country. Go to ***www.recruitingteachers.org***.

PROFESSIONAL DEVELOPMENT OPPORTUNITIES

Dennis Yeager, the Region Director for Aerospace Education for the North Central Region sends us the following announcement concerning the **34th National Congress On Aviation and Space Education** to be held in Minneapolis, Minnesota, March 14-17, 2001 at the Hyatt Regency Hotel. The National Congress in Minneapolis begins with an opening reception on Wednesday evening, March 14. Interesting General and Concurrent Sessions are planned for Thursday and Friday. There will be a closing General Session on Saturday morning, March 17. Saturday afternoon is set aside for optional organized field trips or time to explore the local area on your own. National Congress participants may also want to attend or participate in the annual Minneapolis St. Patrick's Day Parade Saturday evening beginning at 6:30 p.m. The parade takes place just a short walk from the Hyatt Regency Hotel.

The National Congress basic registration fee is only $90.00 per person.

The Crown Circle Banquet and Award Ceremony is an important National Congress event. The Crown Circle for Aerospace Education Leadership is the highest award of the National Congress. Induction into the Crown Circle for Aerospace Education Leadership is one of the highest honors bestowed worldwide in the field of aerospace education. Only 100 members have been inducted into the Crown Circle since it was established in 1979. The Crown Circle Banquet and Award Ceremony is only a $35.00 add-on to the basic registration.

Another popular National Congress event is the Brewer Trophy Luncheon. The cost is $30.00. The Frank G. Brewer Trophy is awarded annually to an individual, a group of individuals or an organization for significant contributions of enduring value to aerospace education in the United States. It is the nation's highest award in aerospace education. The trophy, administered by the National Aeronautic Association since its founding, has been on permanent display at the Smithsonian's National Air and Space Museum since 1952.

The A. Scott Crossfield Aerospace Education Teacher of the Year Award will again be presented at the 34th National Congress on Aviation and Space Education.

This annual award was established in 1986 by aviation pioneer A. Scott Crossfield. It recognizes aerospace education teachers for outstanding accomplishments in aerospace education and for possessing those honorable attributes expected of American educators.

The Crossfield Award is open to any K-12 public, private or parochial classroom teacher who uses aerospace education to teach traditional subjects, teaches aerospace education as a separate subject or who uses aerospace education to enrich the teaching of traditional subjects.

The award consists of a $1,000 cash stipend, becoming a member of the National Congress Crown Circle for Aerospace Education Leadership and free registration and room at future National Congresses on Aviation and Space Education.

The Fifth Annual National Conference on **Standards and Assessment** featuring noted speakers on educational issues, pre-conference workshops on Instructional Alignment: Aligning Standards, Curriculum, Assessment and Instruction and Designing Standards-Based Performance Assessments will be held on April 4-8, 2001 in Las Vegas, Nevada at the Riviera Hotel and Casino. Call (800) 242-3419 or go to ***www.learning24-7.com*** or ***www.nscinet.com*** for registration information.

Why not attend the Southwest Summit on **Using Technology in Education?** The conference will be held at Arizona State University's Tempe campus on March 12-14, 2001. For registration information go to: ***http://mec.asu.edu*** or call (480) 965-9700.

The 14th Annual Conference for Students At-Risk called **Challenging Learners with Untapped Potential** featuring Jonathan Kozol as one of the speakers will be held at the Sheraton Crescent Hotel in Phoenix, Arizona from March 8-11, 2001. Call (800) 242-3419 or go online to ***www.learning24-7.com*** or ***www.nscinet.com***.

The ASCD Annual Conference and Exhibit Show will be held 17-19 March, 2001 in Boston featuring hands-on learning, technology demonstrations, and featured speakers Mae Jemison, former astronaut, Jaime Escalante, master teacher and other education leaders. The Association for Supervision and Curriculum Development is at ***www.ascd.org***. Call (800) 933-2723 for a program preview.

The Annual Summer Institute for Superintendents called **Planning the Future** will be held at the Shanty Creek Resort, Bellaire, Michigan from June 26-29, 2001. Contact Barbara Markle at: ***Markle@msu.edu*** for more information.

Turning Points 2000: Educating Adolescents in the 21st Century, a new report from The National Middle School Association advocates the reordering of priorities through a more rigorous curricula standards-based instruction, and more focused professional development. The report is based upon what middle-level educators believe is necessary to improve Student Achievement. The report can be ordered online at ***www.nmsa.org*** for $20.

INSTRUCTIONAL/RESEARCH DEVELOPMENT

The National Study of School Evaluation has developed Opinion Inventories for students, teachers, parents and members of the community. The inventories contain a comprehensive set of research-based surveys concerning stakeholder perspectives about school quality, data to help guide school improvement planning as well as Scoring and Analysis Services to interpret survey data and Executive Summary Presentation Reports to include color overhead transparencies for reports, presentation outlines, and discussion questions. Sound interesting? Contact the NSSE at (800) 843-6773 or visit the website at ***www.nsse.org***.

Visit ***www.edumatchcom/pewb*** for educational software to match your state curriculum or your teaching style.

The Association for Supervision and Curriculum Development has a new program called **Beginning School Mathematics** in an effort to reform math teaching and learning. For a free information kit, call (800) 933-ASCD (2723) or use email: ***member@ascd.org***. You can also use the following fax number: (703) 575-5400.

If you are required to teach career education then you would be interested in learning more about the American Airlines Travel Academy. According to academy officials, the travel industry will grow to nearly 305 million jobs by 2005. The academy has designed courses to meet the interests of students. Find out more on ***www.aatravelacademy.com***.

Would you like a copy of **Do You Know The Good News About American Education?** which features such issues as the dropout situation, curriculum, student achievement and more? Go to ***http://www.ctredpol.org/pubs/Good_News_final1.pdf***.
The report is from the Center of Education Policy and American Youth Policy Forum.

The National Center for Education Statistics – ***http://nces.ed.gov/nceskids/reference.html*** – provides education information for students across the nation.

As background for the educator, the U.S. Geological Survey maintains a portal specifically for providing useful research links in environmental science and earth sciences. Find information from astronomy to volcanology to how to order maps. Try ***www.usgs.gov/network/science/index.html***.

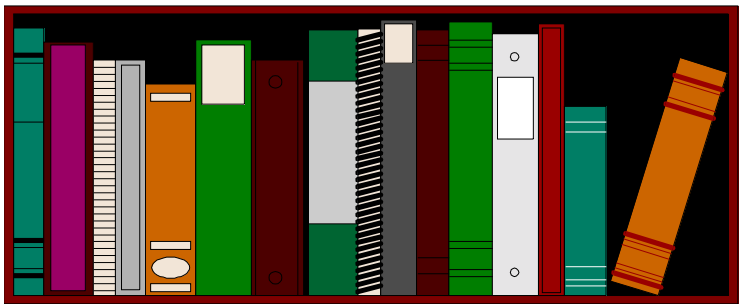
www.nas.edu will lead the teacher through a variety of categories to include space. Learn about up to date projects and track current scientific news.

Middle School: Building Contraptions – The Return of the Incredible Machine: Contraptions contains 128 fun parts which can be put together into imaginative inventions or used to solve a series of puzzles. The program fulfills many school science objectives dealing with mechanics. Go to ***www.sierra.com***. The program is geared for grades 6 and up.

The **NASA Space Place** has added a new category – The Space Place Teacher's Corner designed to support teachers interested in integrating real-life space science and technology activities into their classroom curriculum. Contact ***Nancy.J.Leon@jpl.nasa.gov***

Need information on early reading programs? Why not visit ***www.ed.gov/pubs/ideasatwork/ch_3.html***?

Teaching Children Science by Joseph Abruscato is a paperback volume of lessons and activities based on elementary and middle grades science content. (0-205-33002-9) from Allyn and Bacon at (800) 852-8024 or visit ***www.abacon.com***. [A companion volume (0-205-33021-5) focuses on more emphasis on Internet related sources.]



THE BOOK BIN

Teacher in Space: Christa McAuliffe and the Challenger Legacy by Colin Burgess from the University of Nebraska Press. Recommended as background information for teachers as it is dedicated to the teaching profession and McAuliffe's ability to motivate students.

Creating Highly Motivating Classrooms for all Students by Margery B. Ginsberg and Raymond J. Wlodkowski from Jossey-Bass, Wiley Company is a good companion book to Teacher in Space as it gives a framework to align and apply teaching strategies that help all students to participate in the learning process.

Technology and School Design: Creating Spaces for Learning is a guide for planning technology when remodeling or designing school buildings, hiring personnel and creating effective learning spaces from Technology Leadership Network Publications. Check the network out at ***www.nsba.org/itte/publications.html***.

Technology Funding for Schools by David Bauer will help teachers and administrators develop more effective technology proposals from The Bookshelf at (888) 887-3200.

Into Outer Space by David Owen depicts a view of the past, present, and future of space exploration and our developing understanding of the Universe. The book has

full-color photos showing astronauts' missions to the Moon, satellites, space shuttle and the three-stage Saturn rocket. Go online at ***expert.booksonline.com*** for more information.

Equity and Science Education Reform by Sharon J. Lyck from Lawrence Erlbaum Associates, Inc. is intended for science educators in response to the new science education standards and reforms. Visit the LEA website at ***www.erlbaum.com***.

GRANTS/AWARDS/SPECIAL PROJECTS

The General Electric Company (GE) has had a program since 1994 called the **Early Years Initiative** to help elementary – age children improve their reading skills. To date, GE has allotted $250,000 per year for this effort. For more information, visit the GE website at ***www.ge.com/community/fund.html***, or contact the GE Fund, 3135 Easton Turnpike, Fairfield, Connecticut 06431.

The **Horatio Alger Association** sponsors **The Host School and Scholarship Program** which has awarded more than $13 million in scholarships. You can download application forms from ***www.horatioalger.com*** or call (703) 684-9444.

The **Bayer/NSF** (National Science Foundation) **Award for Community Innovation.** Geared for middle school students, teams are created to attack a problem in their local communities using knowledge learned from science and technology. Ten finalist teams will compete for $64,000 in grants and U.S. savings bonds. Call (800) 291-6020 or visit ***www.bayernsfaward.com***.

Instructor Magazine and Macromedia, a software provider will recognize excellent teacher and/or student- created educational websites. To enter, email your name, email address, school name, address, and phone number, grade(s) taught, URL of classroom website and a brief statement (150 words maximum) highlighting the educational objectives of your site to ***InstructorContest@scholastic.com*** by February 1, 2001.

The John Deere Foundation supports programs that address specific needs in their communities. There are no deadlines as proposals are reviewed throughout the year. The foundation gave $3.3 million for education during 1999-2000. Organizations (non-profit) with 501(c) (3) status are eligible. The foundation funds education (K-12) efforts.

Foundation contact: Donald Margen Thaler, President
John Deere Foundation
One John Deere Place
Moline, Illinois 61265-8098
(309) 765-8000 fax: (309) 765-9855

For future use if unable to meet deadline:

2001 GIFT Grants is a new foundation sponsored by Verizon (Growth Initiatives for Teachers) for secondary school (grades 7-12) math and science teachers. The deadline is January 12, 2001. The foundation funds 70 teams of one math and one science teacher each receiving grants of $8,000-$15,000 to implement a school enrichment program and $7,000 ($3,500 per teacher) for professional development. Applicants must hold a bachelor's degree and state certification and have completed at least one year of full-time paid teaching in the same school district by July 1, 2000, teach grades 7-12 in an accredited public or non-profit private school and teach full-time with more than half of the teaching schedule in math or science.

Area to be funded: The proposed school project must be based in the applicant teams' classrooms or school and directly involve math and science students for the 2000-01 school year.

Foundation Contact: Michele Smolenak, Verizon Gift Grant Program Coordinator
105 Jerry Drive, Suite 120
Newtown, Pennsylvania 18940
Email: *gift@gte.com* (800) 315-5010

Chevy Malibu Teaching Excellence Awards recognize classroom educators who motivate and set high standards for all students. To learn more about the Second Annual Chevy Malibu Awards visit *timeforteachers.com* or call (800) 777-8600.

GREAT WEB SITES

NASA – Exploring Space at *exploringspace.arc.nasa.gov* has interactive software and educational materials with teacher's guides designed for use in grades 5-8. Ask about the Mars UE CD-ROM, Exploring Aeronautics CD-ROM and the Lunar Prospector Simulation units.

For grades 4 and up – Try *www.pbs.org/wnet/savageearth* for animations, photographs, and videos of volcanoes, earthquakes, and tsunamis to help teach about the power of nature.

www.southernco.com/site/learningpower/pages/template_11.asp has discovery activities encouraging kids to investigate circuits and switches.

At *www.brainpop.com/science/electricity/electricity/index.weml* you can watch an animated Web movie about electricity.

Like maps? Try *www.nationalgeographic.com* which has mapping activities.

For an online atlas, printable blackline maps, and links for educators go to ***www.geography.about.com***.

Teachers should also try the U.S. Geological Survey for map resources at ***http://mapping.usgs.gov/www/html/1educate.html***.

Earth from above – go to ***home.fuji.com/efa*** for aerial shots of the planet earth.

Try ***www.spaceday.com*** for Space Day 2001 Design Challenges information. Students (grades 4-6) will be able to use hands-on and mind skills to develop solutions to challenges and teachers will get a great deal of materials and activities.

Wayback: U.S. History for Kids ***www.pbs.org/wgbh/amex/kids*** offers shots and fact-filled units on such topics as the Civil Rights Movement (which complements the lesson plan section in the newsletter), the Gold Rush, and Technology 1900.

Explore the Digital Classroom of the National Archives and Records Administration ***www.nara.gov/education/teaching***.

WEBSITES FOR STUDENTS

To study the planet Earth go to: The GLOBE Program at ***http://www.globe.gov***
Project WILD at ***http://www.projectwild.org/main.html***

To study Mars try the following: JPL Mars web page at ***http://marsweb.jpl.nasa.gov***
Center for Mars Exploration at ***http://cmex-www.arc.nasa.gov***
NASA's Planetary Photojournal at ***http://photojournal.jpl.nasa.gov***

To learn more about Aeronautics and Space Science Journalism go to the following news websites: NASA's Image Exchange at ***http://nix.nasa.gov***
Science @ NASA – ***http://science.nasa.gov***
Science News at – ***http://www.sciencenews.org***
Scientific American – ***http://www.scientificamerican.com***

To learn more about Space Flight Opportunities try the following:
Sounding Rockets- ***http://www/wff/masa.gov/pages/soundingrockets.html***
Microgravity – ***http://microgravity.msfc.nasa.gov***
Flight Experimentation – ***http://www.wff.nasa.gov/~sspp/sem/sem/html***

Interested in Air Traffic Management? Try **Virtual Skies**, an interactive, multimedia Website that uses air traffic management to engage 9-12th grade students in geography, weather and the mathematics of navigation. Go to ***http://quest.nasa.gov/aero/virtual***.

To learn more about aviation make a cyber-visit to the National Air and Space Museum at ***www.nasm.edu***.

VIDEO OFFERINGS

Videos from The Teacher's Video Company offers teachers one free video for every four purchased. The following titles would be helpful to teachers of science and mathematics:

Newton: A Tale of Two Isaacs – 51 minutes-Newton's theories on celestial movement and gravity.

The Scientific Method – 35 minutes-steps in the scientific method- humorous, but clear explanations.

Our Solar System – 45 minutes-shows the discoveries of the Hubble Telescope and more.

Planets – 57 minutes-features computer animation, NASA footage, rhythmic music on a tour of the Universe.

Astronomy 101 – 25 minutes-a simple introduction to the main concepts of astronomy-spot the constellations.

October Sky – 108 minutes-about a student who dreams of becoming a rocket engineer and the teacher who inspires him.

Walk Through History – 22 minutes-CNN follows Neil Armstrong and Buzz Aldrin as they post the American flag on the moon.

Wilbur and Orville Wright – 50 minutes-about inventors ahead of their time.

What Is Gravity? – 15 minutes-a neat program that explains the law of gravity and shows real-life examples of gravitational forces.

The Teacher's Video Company can be reached at (800) 262-8837.

DID YOU KNOW?

That a study by Nielson/NetRatings (***www.nielson-netratings.com***) indicates that women have edged past men making up 50.8 percent of the online population?

That in 1990, Tim Berners-Lee created a browser/editor program called the World Wide Web? He later named it Nexus so it wouldn't be confused with World Wide Web.

That you can read transcripts of speeches, press conferences, policy statements and announcements of nominations by the President and members of his cabinet? New documents are posted each day. You can also search the archives. Go to ***http://www.whitehouse.gov/***.

That NASA Television (NTV) features Space Shuttle mission coverage, live special events, interactive educational live shows, electronic field trips, aviation and space news and historical NASA footage? Check the Internet for programs listings at ***http://www.nasa.gov/ntv***. You can also call (202) 358-3572.

That there is a National Geographic Kids Network which provides opportunities for students to collect and share original scientific data with other students. Find out more by calling (800) 368-2728.

That if you go to ***www.first-to-fly.com*** you can view a history of the airplane and flight? You will enjoy the variety. Have fun.

That you can get a terrific video kit called **Fueled for Flight?** It has a 20-minute video, teacher's guide, blackline masters and assessment information. It is suitable for grades 5-6. To order you need school letterhead. The address is: National Cattlemen's Beef Association, 444 North Michigan Avenue, Chicago, Illinois 60611. Your editor has already used it.
That the first flight across the South Pole occurred in 1929?
That Apollo 17 was launched in 1972 and you can get history and moon images by visiting ***www.nasm.edu/apollo/AS17.htm***?
That you can get interesting facts about our coins and bills, and learning games for kids from the U.S. Mint at ***www.usmint.gov***?
That within the space of each 24 hours, astronauts see 16 sunrises and 16 sunsets?
That the International Space Station (ISS) is a global partnership of sixteen nations?

NEAT WEBS FROM THE CIVIL AIR PATROL NATIONAL HEADQUARTERS STAFF

The Internet Learning Network for middle school students provides an opportunity for measuring math and science skills with counterparts worldwide. The site offers tutorials, practice sessions and reasons why math and science matter in today's world. Go to ***http://www.getsmarter.org/index.cfm***.

Mega Math allows students and teachers to experience math in ways that is experienced by mathematicians and scientists. Through fun activities and real world applications, which are tied to the NCTM standards, the project allows students to see what mathematicians actually do. Go to ***http://www.c3.lanl.gov/mega-math/***.

SoHo: The Solar and Heliospheric Observatory provides an uninterrupted view of the sun. The site offers lesson plans, pictures of the sun and a collection of space science information as well as a question and answer service with Dr. SoHo. Visit ***http://sohowww.nascom.nasa.gov/***.

Sustainable Seas Expeditions focuses on exploration and discovery, scientific research, and public awareness of the marine environment. The teaching materials are linked to the national standards. Visit ***http://sustainableseas.noaa.gov/***.

Kids' Castle is a reference for finding Smithsonian magazine articles written on kids – related topics to include science and air and space. You will find games, contests, message boards with questions enabling kids from around the world to talk to each other. Go to ***http://www.kidscastle.si.edu/home.html***.

The USDA for Kids is a gateway to the Department of Agriculture kids' pages and programs. It includes food guide pyramids, weather maps and other information from ***http://www.usda.gov/news/usdakids/index.html***.

CONTINUING THE HISTORY OF FLIGHT
1903-2003

In the last issue readers were treated to a unit on the role of women in aviation. As we prepare for Black History Month, let's look at the accomplishment of the Tuskegee Airmen in aviation history. In this issue we will present another comprehensive unit introducing a group of men-all black-who had a hand in shaping aviation today because of their dedication in the past.

Just as it wasn't easy for women who had to fight discrimination and prejudice because of their race (in some instances) and because of their gender, The Tuskegee Airmen had to fly in segregated circumstances. The story of black aviation is one of breakthroughs ***against restrictions as stated in the Teacher Guide from the Smithsonian National Air and Space Museum.***

As with the women, the Tuskegee Airmen had to overcome prejudices against their fighting ability. In 1939, the United States was on the brink of WWII and the U.S. Armed Forces were segregated. President Franklin D. Roosevelt planned to organize the Civilian Pilot Training Program (CPTP) to authorize flight training for college students in case war broke out. Through the NAACP (National Association for the Advancement of Colored People), black schools insisted that they be included in the program.

In 1941, the War Department established the all-black 99th Fighter Squadron at Tuskegee Institute in Tuskegee, Alabama as an experiment. They were later joined by other squadrons – the 100th, the 301st and 302nd joined together to form the 332nd Fighter Group. The experiment was expected to fail! The training standards were higher for black pilots than for white pilots, but in the end the experiment proved successful. A total of 982 airmen earned their wings. One of the first graduates of Tuskegee was Benjamin O. Davis who rose to the rank of four-star general. Also graduating, from the class was another four-star general – Daniel "Chappie" James. On May 31, 1943, the 99th Squadron, the first group of men trained at the Institute, arrived in North Africa. In Sicily, the squadron registered their first victory against an enemy aircraft and went on to record more impressive statistics against German forces. They flew P 40's and P 39's and P 47's/P51's. The Tuskegee Airmen painted the tails of their planes red and became known as the Red Tails. They never lost a bomber while flying 15,533 sorties over 1,578 missions throughout Europe and North Africa. Sixty-six Red Tails were killed during the war and thirty-three became prisoners of war.

The Tuskegee Airmen destroyed 111 German airplanes in the air and another 150 on the ground. They also destroyed 950 railcars, trucks and other motor vehicles. For their war efforts, The Tuskegee Airmen received 150 Distinguished Flying Crosses, 744 Air Medals, 8 Purple Hearts and 14 Bronze Stars.

The Tuskegee Airmen had two wars to fight. The one against the Axis powers in Europe and the one against racism at home. The success of the Tuskegee Airmen helped propel the Air Force, formed in 1947 as the newest branch of the military, to become the first service to integrate under President Truman's order. On July 26, 1948, President Truman issued Executive Order #9981 desegregating the Armed Forces.

Perhaps the two best known Tuskegee Airmen, who went on to hold impressive records in the United States Air Force were Benjamin O. Davis and Daniel "Chappie" James. Both rose to become four-star generals.

General Daniel "Chappie" James received a bachelor of science degree in physical education from Tuskegee Institute and completed the civilian pilot training program. He served as a civilian instructor pilot in the Army Air Corps Aviation Cadet Program until 1943 when he entered the program and was commissioned a second lieutenant. He also completed fighter pilot combat training. General James was promoted to four-star grade and assigned as commander-in-chief, North American Air Defense Command at Peterson AFB, CO. He had operational command of all United States and Canadian Strategic aerospace defense forces.

Ask your Region Director for Aerospace Education for the "Chappie" James Educational package to enhance the knowledge base of your students. Go to ***http://www.af.mil/news/biographies/james_d.html*** for an extensive biography.

General Benjamin O. Davis, Jr. graduated from West Point in 1936 and joined the 12 cadets in the first flying training program for blacks at Tuskegee, Alabama. He received his wings in 1942 after becoming the first black officer to solo an Army Air Corps aircraft.

He commanded the 99th Pursuit Squadron during WWII. Under his command, the group flew more than 15,000 sorties against the Luftwaffe. He also saw action in Korea. General Davis received his fourth star nearly three decades after retiring from a military career spent fighting enemies abroad and racial barriers at home. Visit ***http://www.wpafb.af.mil/museum/afb/davisbio.htm***.

To embellish the study of the Tuskegee Airmen, teachers will find the following books helpful:

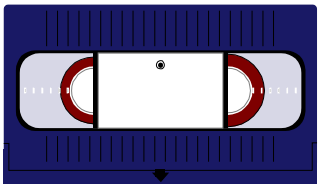
Davis, Benjamin O., Jr. Benjamin O. Davis, Jr.: An Autobiography, Smithsonian Institute Press, 1991.

Holway, John B. Red Tail, Black Wings: The Men of America's Black Air Force. Yucca Tree Press, 1997.

McKissack, Patricia and Frederick. Red Tail Angels: The Story of the Tuskegee Airmen of World War II. Walker and Company. New York, 1995.

Pilgrim, Millie. Janson's Adventure with the Tuskegee Airmen. (This is a children's book about the Tuskegee Airmen.)

Reference: African American Pioneers in Aviation, 1920-Present
Teacher Guide, Smithsonian National Air and Space Museum, Washington, D.C.



Video Offerings
The Tuskegee Airmen
Nightfighters: The True Story of the Tuskegee Airmen
African American Heroes of WWII

Lesson Plans focusing on the Tuskegee Airmen were designed by graduate students at Kean University in New Jersey. All of the curriculum designers are Aerospace Education Members and worked on the Tuskegee Airmen curriculum guide. This newsletter features a few lessons from the curriculum team.

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TASK – PHYSICAL EDUCATION

Standards: All students will learn and apply Health-related fitness concepts.

Aerobic Endurance –

Cycle ergometry measures the volume of oxygen consumed while pedaling a bicycle as tension is increased and predicts a person's cardiovascular fitness. This type of physical conditioning was part of the training for the Tuskegee airmen and for Air Force candidates today.

1. Students will choose a stationary bicycle.
2. Students will take their resting heart rate.
3. Students want to work at their target heart rate 160-170 beats per minute. (Get music selection)
4. Students will begin pedaling on a low tension as a warm-up. (5 min.)
5. As music begins to pick up pace, students will increase tension slightly on bikes, and keep pace as instructor walks by with encouragement. (3 min.)
6. Students will lighten up on tension, but continue pedaling at good pace. (2 min.)
7. Instructor will have students prepare for upcoming incline (hill). Students will stand up on bikes, increase tension and pedal hard for (3 min.) Encouragement is delivered throughout.
8. Students will again continue to pedal while lowering and sitting back down on bikes. (2 min.)
9. Students prepare for the conclusion by keeping tension low and pedaling as fast as possible to the finish line. Teacher continues to motivate all students with positive comments and reinforcements. (3 min.)
10. Cool-Down- students continue pedaling at a slightly slower pace (Take heart rate, should be at or close to target heart rate) Continue pedaling even slower, to bring heart rate back to normal. (2 min.)

11. Students stop pedaling and take pulse rate for 6 seconds. Add a 0 to the number to equate to heart rate for (1 min.)
12. Heart rate should be almost down to resting heart rate.
13. Upon completion, students should get off bicycles and record their heart rates in their portfolios.

ASSESSMENT ACTIVITY

CALCULATING YOUR TARGET HEART RATE

Directions: Using the Karvonen Method of calculating heart rate, fill in the blanks below.

THR = Target heart rate
MHR = Maximum heart rate
RHR = Resting heart rate (taken just after waking in the morning)
TI% = Training intensity

1. 220 - _____ = _____
   (your age) (your MHR)

2. THR = (MHR – RHR) X TI% + RHR

   THR = (_____-_____)X_____+_____
   (your MHR) (your RHR) (your desired TI%) (your RHR)

   THR = _____beats/min

♦♦

TASK– SOCIAL STUDIES

Standards: All students will acquire geographical understanding by studying the world in spatial terms.
Choose either the country of Germany or Italy. Using a history book, encyclopedia, atlas or the computer, find the answers to the following questions.

1. What countries border the country you chose and in what continent is the country?
2. Name one mission that the Tuskegee Airmen had in that country?

3. What was the result of the mission?
4. Draw a map of the country that you chose and indicate the longitude and latitude of the mission you discussed in question 2.

Materials needed: Atlas, Encyclopedia, information sheet on Tuskegee Airmen

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TASK – MATHEMATICS

Standards: Students will use calculators to enhance mathematical thinking, understanding and power.
Students will understand, select and apply various methods of performing numerical operations.
Students will develop an understanding of statistics and probability and will use them to describe sets of data, model situations, and support appropriate inferences and arguments.

ACCOMPLISHMENTS OF THE TUSKEGEE AIRMEN

About 992 Americans of African ancestry completed their flight training at Tuskegee Army Air Field. Despite initial obstacles, 445 went oversees as combat pilots in the European Theater of Operations, North Africa and the Mediterranean. Flying “bomber escorts” and ground attack on 15,533 sorties between May 1943 and June 9, 1945, the Tuskegee Airmen compiled an enviable combat record. None of the bombers they escorted was lost to enemy fighters; they destroyed 251 enemy aircraft and won more than 850 medals. Their record was not without losses, however, with sixty-six (66) Tuskegee Airmen killed in action and 33 forced down or shot down and became prisoners of war.

Use your calculator and the above text to answer the following:

1. What was the probability that a Tuskegee Airman would be in combat?

2. What were the average (mean) number of sorties flown – per month, per week, and per year? (3 separate answers)

3. What percent of the pilots that went oversees returned home safely after the war?

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TASK – LANGUAGE ARTS

Standards: All students will speak for a variety of purposes and audiences.

SPEAKING: "MY FANTASTIC DREAM"

Booker T. Washington was the first principal of the Tuskegee Institute. He arrived at Tuskegee in 1881. According to Robert Jakemen, author of **The Divided Skies,** the aviation idea was only a "fantastic dream in 1881 to Booker T. Washington . . . . ."

What is your "fantastic dream" for yourself or our world? Present your dream in a five minute speech. You may use note cards. Include visual aids, original works of art, posters, or other props to make your speech more interesting.

Materials needed: posterboard, construction paper, note cards, markers

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TASK – LANGUAGE ARTS

Standards: All students will read various materials and texts with comprehension and critical analysis.
All students will write in clear, concise, organized language that varies in content and form for different audiences and purposes.

Reading/Date Line

Read the article "The Tuskegee Airmen" which you can access from your computer by visiting ***http://www.branden.com/tuskegee/facts.html*** and then create a date line. Use information in the chronology section of the article and information about military events in the world which took place at the same time (1940-1975).

Materials needed: Article, "The Tuskegee Airmen," Time line sheet, markers

Reference: ***Unsung Heroes: The Tuskegee Airman of WWII***
by Brenda Pilson
from *Creative ClassroomMagazine*-January / February 1997.

While studying the Tuskegee Airmen, why not introduce students to Major Robert H. Lawrence, Jr. – America's First African American Astronaut and Dr. Guion Steward Bluford, Jr., also an astronaut?

AMERICA'S FIRST AFRICAN AMERICAN ASTRONAUT

Major Robert H. Lawrence, Jr. was born in 1935 in Illinois and graduated at 16 in the top 10 % of his high school class. At age 20, he graduated from Bradley University with a degree in chemistry. While in college, he served as a cadet commander under the Air Force Reserve Officer Training Corps and upon graduation was commissioned a second lieutenant in the Air Force Reserve Program.

He earned a doctorate in chemistry from Ohio State University. By this time he had completed pilot training and had served as an instructor pilot in the T-33 training aircraft for members of The German Air Force.

In 1967, Major Lawrence was selected to become an astronaut in the USAF's Manned Orbiting Laboratory. Lawrence flew research flights in the F-104 in an effort to test various theories related to un-powered flight that has led up to the present day design of the Orbiter that permits it to glide from space to the landing that can be viewed on television during every Space Shuttle Mission. The Orbiter, unlike a passenger jet aircraft, does not have engines mounted under its wings or at the rear that an airline pilot can use to control the landing of such a large jet aircraft. At an altitude of approximately 200 miles, the Orbiter "breaks out of its circular orbit" and glides back to earth for landing. The Orbiter has to land successfully each time, because it, as previously indicated, has no engines to attempt a second approach.

While Major Lawrence flew several F-104 simulated landings, the flight in which he lost his life was a flight in which he flew in the role of co-pilot and instructor pilot when the student that he was instructing lost control of the aircraft, leading to the crash that took his life.

Major Lawrence was one of the early pioneers of the space program by serving in the developing and testing of a variety of vehicles that would one day take humans into space. He also helped pioneer many of the astronaut training programs. Since the Space Shuttle became operational, African Americans have held all of the positions associated with a Space Shuttle crew to include that of Mission Specialist, Pilot, and Commander.

DR. GUION STEWARD BLUFORD, JR.

Dr. Bluford trained as Mission Specialist for NASA. He was born in Philadelphia, Pennsylvania in 1942. Bluford graduated from Penn State University in 1964 as a distinguished Air Force ROTC graduate. Most of his collegiate work was done in the area of aerospace engineering having received a bachelor of science degree from Pennsylvania State University, a master of science degree with distinction in aerospace engineering from the Air Force Institute of Technology and a doctor of philosophy in aerospace engineering with a minor in laser physics also from the Air Force Institute of Technology.

Dr. Bluford received many honors for his work. Like Major Lawrence, Bluford trained as a pilot, receiving his wings in 1966. He served in Vietnam where he flew 144 combat missions, 65 of which were over North Vietnam.

Bluford became a NASA astronaut in 1979. His technical assignments have included working with the Remote Manipulator System (RMS), Spacelab-3 experiments, Space Shuttle systems, verifying flight software in the Shuttle Avionics Integration Laboratory (SAIL) and the Flight Systems Laboratory (FSL), and serving as the Astronaut Office point of contact for generic Spacelab and Shuttle External Tank issues. A veteran of four space flights, Bluford was a mission specialist on STS-8 in 1983, STS 61-A in 1985, STS-39 in 1991, and STS-53 in 1992.

Bluford served on the crew of STS-39, which launched from the Kennedy Space Center, Florida on April 28, 1991, aboard the Orbiter, Discovery. The crew gathered aurora, Earth-limb, celestial, and Shuttle environment data with the AFP-675 payload. This payload consisted of the Cryogenic infrared Radiance Instrumentation for Shuttle (CIRRIS-1A) experiment, Far Ultraviolet Camera experiment (FAR UV), the Uniformly Redundant Array (URA), the Quadruple Ion Neutral Mass Spectrometer (QINMS), and the Horizon Ultraviolet Program (HUP) experiment. The crew also deployed and retrieved the Spas-II with the RMS. The Spas-II carried the Infrared Background Signature Survey (IBSS) experiment, which collected Shuttle exhaust plume, Earthlimb, Earthscan, aurora, chemical/gas release and celestial data. The crew also operated the Space Test Payload-1 (STP-1), and deployed a classified payload from the Multi-Purpose Experiment Canister (MPEC). After completing 134 orbits of the Earth and 199 hours in space, Discovery landed at the Kennedy Space Center, Florida on May 6, 1991.

PUBLICATIONS FOR THE CLASSROOM

□ SCHOOL PROGRAMS GUIDE

Describes tours, science demonstrations, and planetarium and IMAX theater schedules that require reservations. Includes reservation forms and the information needed for planning a field trip to the Museum.

8 pages; Grades K-12; No charge

□ COSMIC VOYAGE TEACHERS GUIDE

Activities in this guide explore the relative size, scale, and how scientists collect empirical data. Works well alone or as a supplement to the IMAX film, Cosmic Voyage.

60 pages; Grades 4-12; No charge
(limited supply-one per teacher)

□ DESTINY IN SPACE TEACHERS GUIDE

Activities, information, and resources introduce the challenges of space exploration. Covers a range of topics including muscle response to weightlessness, balance, clothing, communication and gardening.

60 pages; Grades 4-12; No charge
(limited supply – one per teacher)

□ EXPLORING THE PLANETS CYBER CENTER

Interactive WEB site where students can simulate the research techniques used by planetary scientists. Students conduct exercises at three levels of difficulty to learn how scientists use images to study the Solar System.

Grades 6-12; No charge; Internet access only:
www.nasm.edu/ceps/silmages

□ REFLECTIONS ON EARTH: BIODIVERSITY AND REMOTE SENSING TEACHER GUIDE

With lessons for interpreting satellite images and field studies, students learn to measure forest biodiversity on a local, regional, and global scale.

45 pages; Grades 6-10; No charge

□ HOW THINGS FLY FIELD TRIP GUIDE

Classroom and gallery activities in this guide prepare students for a visit to the How Things Fly gallery, an interactive exhibition on the physics of flight. Topics include air pressure, gravity, and buoyancy.

25 pages; Grades 4 – 12; No charge

□ LOOKING AT AIRPLANES VISITORS GUIDE

Looking activities for seven of the Museum's airplanes. Explore the science of flight. The guide complements the How Things Fly gallery and is intended for use by adults visiting the Museum with young people.

□ AFRICAN AMERICAN PIONEERS IN AVIATION TEACHERS GUIDE

Lessons that guide students to use primary source documents to explore the challenges and successes of African American pioneers who established a place in aviation and the space industry for subsequent generations.

☐ **REFLECTIONS ON EARTH EXPLORING EARTH FROM SPACE TEACHING POSTER**

Classroom activities to introduce students to remote sensing. Students use satellite images to investigate changes on the Earth's surface over time and then use scale to calculate distance and area.

Grades 6-10; No charge

☐ **AND A STAR TO STEER HER BY FIELD TRIP GUIDE**

Introduces students to the tools and techniques used to navigate by the stars. Provides classroom activities and background information that work well alone or as a supplement to the new Planetarium show, And A Star to Steer Her By.

24 pages; Grades 5-9; No charge

☐ **FROM AIRMAIL TO AIR-LINES TEACHER GUIDE**

Lively classroom activities for students that explore changes in air transportation from 1920 to the present. Designed as a companion to transportation units in the curriculum and can be used alone or with hands-on activities during a Museum visit.

40 pages; Grades 3-5; No charge

☐ **SKY QUEST TEACHING POSTER**

What can we see in the night sky with our naked eyes? What can we see with a telescope? Activities for the classroom will prepare students for the Planetarium show, Sky Quest.

Grades K-3; No charge

To receive any of the materials listed place a check by the item (s) desired and fill out the information requested below. Mail or fax the form to: Educational Service Center, National Air and Space Museum, Smithsonian, Washington, DC 20560-0305. Fax number (202) 633-8928

NAME

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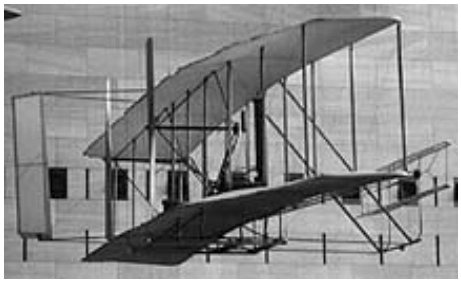
GRADE (S) TAUGHT

SUBJECT (S) TAUGHT

SCHOOL DISTRICT



Be sure to visit the
NATIONAL AIR AND SPACE MUSEUM
Online: ***www.nasm.si.edu***

SMITHSONIAN
NATIONAL AIR AND SPACE MUSEUM
Exhibits and Public Services Department
Public Services Division

The editorial staff for the Aerospace Education News wishes you all a beautiful New Year. May 2001 find you in good health and ready to meet aerospace/aviation and educational challenges of the future.

We hope that the newsletter has served you well in your quest for educational excellence and we look forward to helping you expand the knowledge base of your students as we enter another exciting year.

To end our first 2001 issue, we hope you find the following information helpful. This information on new programs comes from The Secretary's Conference on Educational Technology: Measuring Impacts and Shaping the Future sponsored by Secretary of Education Richard W. Riley – U.S. Department of Education.

Generation *www.Y* trains elementary and secondary school students on computing and telecommunication skills. Each student is partnered with a teacher, and together they design and develop a project that incorporates technology for use in regular classroom teaching. Students help teachers use technology to deliver more effective lessons. (***http://genwhy.wednet.edu***)

Challenge 2000 Multimedia Project, in which students learn course content and technology skills, completing curriculum-based projects that end in multimedia projects. For K-12 classrooms, activities are student-centered and interdisciplinary, and integrate real world issues and practices supported by multimedia. (***http://pblmm.k12.ca.us***)

The WEB Project is a consortium of community organizations, small businesses and educational institutions that engage new technologies to effect systemic reform in school systems throughout Vermont. Programs utilize multimedia production and telecommunications in areas of art, literature, history, and music composition. (***http://www.webproject.org***)

EXTRA! EXTRA!

Robotel has launched a sweepstakes for schools to obtain a Smartclass electronic classroom valued at $25,000. The contest is open to all accredited U.S. public or private elementary and secondary schools as well as two and four-year institutions of higher education and non-profit organizations (the exception is school boards). To register, visit ***www.gosmartclass.com***.

PatentCafe.com is sponsoring three kids' invention programs. The Academy of Applied Science, Kids Invent Toys/Kids Invent Robots, and the Edison Young Inventors Organizations will receive funding to support invention and computer training. For more information, visit ***www.patentcafe.com***.

H A P P Y N E W Y E A R !